

Learning Community Assessment: multiple choice!

An alternative for negative marking
that is not disadvantageous for
risk-averse students?



multiple choice

- way to measure knowledge
- used a lot, especially for larger groups
- can be graded automatically
- guessing in multiple choice exams is considered as a problem
- many different ways of grading multiple choice exams

Gentse Universiteit schaft giscorrectie definitief af

GOEDE STUDENTEN DE DUPE VAN
GISCORRECTIE

'Examens worden niet eerlijker
door giscorrectie af te schaffen'

Giscorrectie benadeelt 'eerlijke'
studenten



	Engineering positioning test	total	female	male
July 2014	average number of blank answers (out of 35 questions)	6,27	7,22	5,98
	standard deviation	4,20	4,26	4,14
	p-value T-test M vs F	7,70E-04	→ significant	
September 2014	average number of blank answers (out of 35 questions)	9,42	11,09	9,00
	standard deviation	4,89	4,86	4,82
	p-value T-test M vs F	3,57E-03	→ significant	

Negative marking

- student indicates the only correct answer
- How the grading works: if you indicate
- the only correct alternative: +1
- 1 of the 4 incorrect alternatives: $(-\frac{1}{N-1})$
- the blank option: 0

What is the temperature in the room (up to 0.5°C precise)?

5-9.5°C 10-14.5°C 15-19.5°C 20-24.5°C 25-29.5°C No idea

(I) (I) (I) (I) (I) (I)

Elimination marking

- student eliminates alternatives by indicating which alternatives are impossible (possible to indicate doubt)
- reward eliminating wrong alternatives $(+\frac{1}{N-1})$
- punished if the correct alternative is eliminated (-1)
- eliminate nothing = blank answer (0)

What is the temperature in the room (up to 0.5°C precise)?

5-9.5°C 10-14.5°C 15-19.5°C 20-24.5°C 25-29.5°C

impossible (I) (I) (I) (I) (I)
possible (P) (P) (P) (P) (P)

Experimental validation

1st bachelor course in Engineering Science

course = Electrical networks

setting: exam was multiple choice using negative marking

Two steps:

- unannounced try-out + survey
- examination with elimination testing

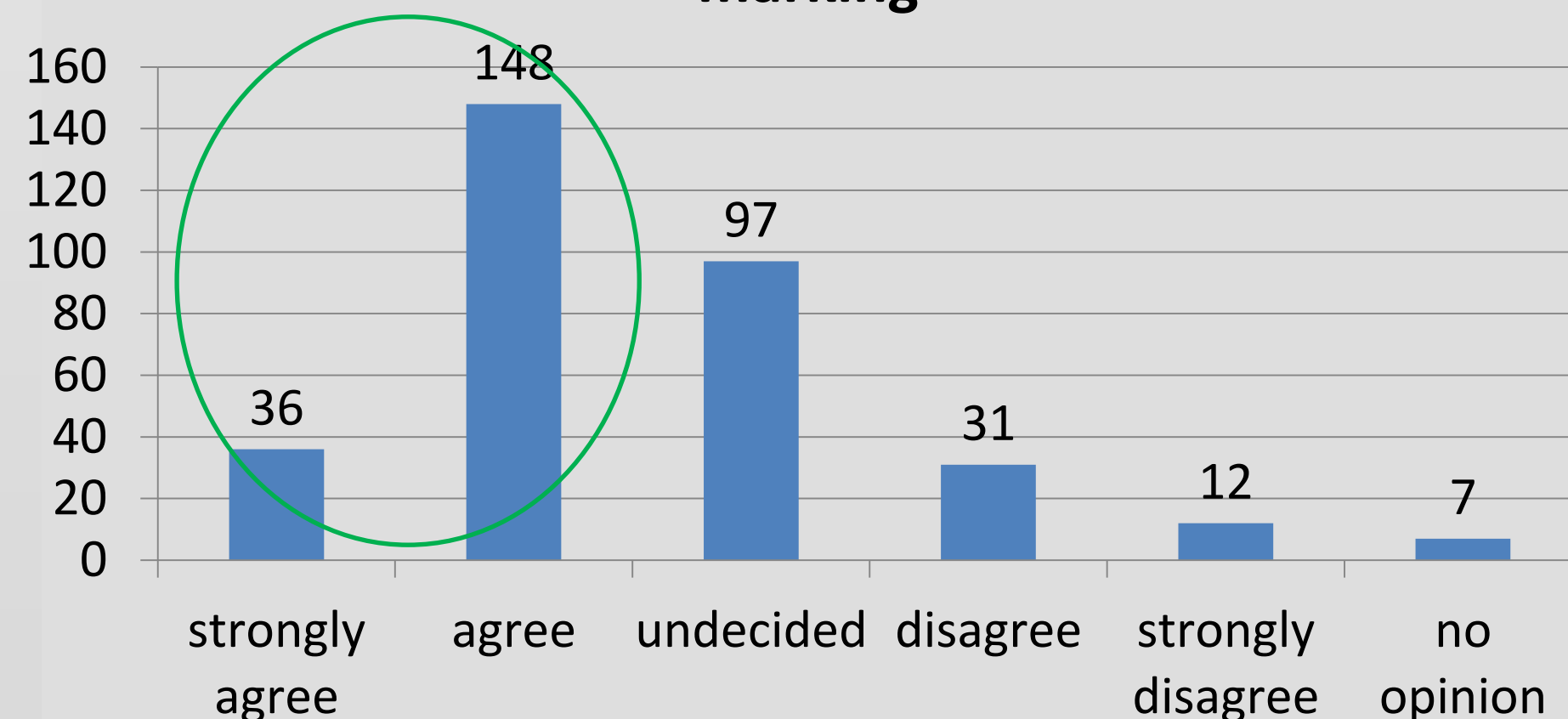
final exam statistics

number of students	425
maximum score	20
average score	12,12
median	13
standard deviation	4,6
% passed	68,47

Analysis of june examination

Score	% questions	
1,00	57%	perfect knowledge
0,67	9%	partial knowledge
0,33	4%	
0,00	19%	no knowledge
-0,33	9%	
-0,67	2%	misconcept
-1,00	0%	total misconception

I prefer elimination marking over negative marking



Theoretical validation using prospect theory

